File No. 631

Noted by RLF

BUREAU OF
Entomology and Plant Quarantine
R. F.
MAY 19 1948
FOREST INSECT LABORATORY,
PORTLAND, OREGON

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

ANNUAL FOREST INSECT STATUS REPORT
IDAHO AND MONTANA
1947

By James C. Evenden
Senior Entomologist
Division of Forest Insect Investigations

INTRODUCTION

Each year forest insects destroy large volumes of valuable timber. To prevent this unwarranted drain upon the timber resources of the region, large sums of money are spent in the control of insect epidemics of these insects. Although the benefits derived justify such expenditures, large control operations are to be avoided whenever possible. The control of forest insect epidemics is expensive, time consuming, and wasteful. Furthermore, no assurance can be given as to the permanency of the results obtained.

To be successful, forest insect control must have as its objective the prevention of epidemic outbreaks, rather than their control. This objective can be obtained only from an early detection and prompt suppression of all potentially dangerous forest insect infestations. This will not be a simple task and is fully dependent upon a permanent well organized program of forest insect detection surveys. These surveys will quite readily indicate the early stages of potentially dangerous bark beetle epidemics, but obtaining similar information for defoliating insects will be a more difficult but not impossible task.

The destruction of timber by forest insects has been judged as being of sufficient importance to warrant adequate programs of detection and suppression. Enabling legislature for this program was passed by the United States Congress in 1947. Putting this legislation into an action program will be a forward step in preventing excessive losses of merchantable timber as a result of insect activity.

This report represents the forest insect situation within the states of Idaho and Montana for the 1947 season. It is recognized that it may not be complete, but all available sources of information have been used. One of these is the Forest Rangers Annual Report, which continue to be of value in presenting information as to the forest insect situation within the Ranger Districts of the national forests. In many instances these reports are the first record received of what have subsequently developed into serious situations.

FOREST INSECT SITUATION

Bark Beetles

Mountain Pine Beetle (Dendroctonus monticolae) - White Pine

In all mature western white pine stands there is an annual loss of merchantable trees as a result of mountain pine beetle activity. Although this so called normal or endemic loss is not of great importance for any one year, over a period of time it builds to a startling volume. In addition to this rather insidious loss there is the inevitable epidemic which destroys a large percent of the total white pine volume in a few years. These epidemic outbreaks occur as timber stands become susceptible to bark beetle attack. The susceptibility of timber stands is of course determined by the number of individual trees that are low in vigor and resistance. Individual tree resistance is lowered when the wood producing capacity of the soil is overtaxed and annual growth is materially reduced.

Western white pine is an intolerant tree species which in time must give way to the more tolerant species which subsequently form the climax timber type. White pine stands are but temporary stockings in a natural transition of tree species. They must be considered as a perishable commodity, which without proper care, cannot be set aside and held until wanted.

On the Coeur d'Alene National Forest serious losses are occurring in the following areas:

Units	Acres	Infested Trees	Percent of White Pine Stand Infested
Indian Creek	1,420	600	3.93
Sissons Unit	4,700	1,200	.82
Yellow Dog and Downey	8,280	1,865	.40

Although the entire acreage of these units is given, the infestation is fairly well concentrated on only a portion of it. Control measures have been recommended for these situations, and the work will be conducted during May and June, 1948.

There is an infestation in the Twelve Mile drainage of the Cabinet National Forest, which because of its potentials, will need be checked in 1948. There are several other areas on this forest, namely Big Creek, Blue Creek, and Vermillion Creek where the seriousness of the situation will warrant extensive examinations during the coming season.

The Cedars, and along the river below the Cedars, are the only areas on the Clearwater National Forest, where the mountain pine beetle

situation in white pine will warrant 1948 consideration. However, there are other areas in this forest where the status of the infestation is not known, which warrants extensive examination during the coming season.

No serious mountain pine beetle infestations were recorded on the Kaniksu Forest during the past season. However, in the Bismark Mountain, Nickleplate, Big Meadow, and other similar areas, serious losses of pine are occurring in timber stands of 50 to 80 years of age. Although the mountain pine beetle is attacking most of these trees, in most instances its attacks are not considered as primary.

Throughout the Kootenai National Forest there are a number of white pine areas where the mountain pine beetle infestation is of sufficient severity to call for examinations.

As stated, there are infestations of this insect in all mature white pine stands, and the areas mentioned are but those for which information is available. These and many other areas will need be covered with fairly intensive surveys during the coming season, if information to be used in the prevention of epidemic outbreaks is to be obtained.

Mountain Pine Beetle - Lodgepole Pine

In pure lodgepole pine stands the mountain pine beetle reaches its highest level of destructiveness. Epidemics develop which spread for miles, leaving vast forests of dead trees. The control of such outbreaks, where there are thousands upon thousands of trees to be treated, is an expensive and sometimes questionable procedure. During the coming season an attempt will be made to prevent the development of such an epidemic situation on the Kootenai Forest, and on the Targhee and Teton National Forests, an attempt will be made to control an epidemic that has already developed.

Two severe centers of mountain pine beetle infestation in lodgepole pine were recorded on the Kootenai Forest during the 1947 season. In the Horse Lakes area on some 1100 acres there are 2,000 trees harboring 1947 attacks which amounts to 3.1% of the lodgepole stand. Near the Zonolite mine, on a small area of 160 acres there are 2500 infested trees which represents 18.3 percent of the stand. Unless controlled, these centers of infestation can give rise to an epidemic which will destroy the lodgepole pine stands of the Kootenai Forest. This is an instance where the early detection of a potentially dangerous infestation will permit the necessary action to prevent its development. Control measures will be conducted in May and June 1948.

In 1944, a serious mountain pine beetle infestation was recorded within the lodgepole pine stands of the Caribou National Forest in south-

eastern Idaho. Control measures were conducted during the subsequent winter, but unfortunately it was possible to treat only a part of the infested trees. The following season an area of severe infestation was recorded on the Teton Forest, with the situation on the Caribou becoming more extensive. By the fall of 1946 the infestation had spread from the Caribou to the southern portion of the Targhee, and the Teton situation had increased in severity. Control was undertaken in the spring of 1947 to prevent further spread of this infestation into the valuable scenic forests of the Yellowstone National Park, as well as to protect the commercial values of the Teton and Targhee National Forests. Although the work was not as complete as had been hoped for, it successfully prevented any additional northern spread of this epidemic. A survey of the infestation area in the fall of 1947 showed that there are now approximately 100,000 infested trees to be treated during the 1948 season. This project offers an example of control directed against an epidemic situation which developed before action was taken.

There is a light infestation of this insect in the Copper Flats area of the Bitterroot National Forest, which was reported as not serious. The Cabinet National Forest reports an infestation in the Cedar and Corona Creek areas. No red tops were recorded but several new attacks were observed, which should be re-examined during the coming season.

Mountain Pine Beetle - Ponderosa Pine

Epidemic outbreaks of this insect in mature ponderosa pine result in heavy timber losses. In 1945 a serious infestation was discovered near Lincoln, Montana, on the head of the Blackfoot River. A survey of this area revealed a 1945 loss of 1.33 trees per acre. On the lands of the A.C.M. Lumber Company it was estimated that there were more than 7,400 trees killed during that season. No control was conducted, but in 1947 an attempt was made to salvage the dead and dying trees through timber sale to small mill operators. A report of this situation indicates that there has been some reduction in the status of this infestation.

Late in 1947 a serious situation was recorded in the ponderosa pine stands of the Castle Mountain and Little Belt Districts of the Lewis and Clark National Forest. A rather extensive survey of this situation showed that throughout the scattered pine stands of these two Ranger Districts there were some 5,850 trees on an area of 3,400 acres which were attacked and killed in 1947. Although this is a serious bark beetle infestation, with heavier losses predicted for the future, the value of the timber at stake did not warrant the cost of control.

In the Thompson River drainage of the Cabinet National Forest there is an infestation of the mountain pine beetle which may become more

serious than anticipated. Groups of ponderosa pine trees harboring 1947 attacks of this insect, seems to have increased in numbers over previous seasons. Considerable logging is underway within this area and it may be that this disturbance has contributed to this situation.

The Kaniksu National Forest reports a light infestation of this insect within the ponderosa pine stands of the Mission and Round Prairie Creek drainages. This situation will be followed carefully to guard against the development of a more destructive outbreak.

There is also a light scattered infestation within the ponderosa pine stands of the Morrell Creek drainage of the Lolo National Forest. The report states that the infestation is widely scattered, but that it is of sufficient intensity to warrant further examination in 1948.

Several spots of mountain pine beetle infestation were recorded during the season within the scattered areas of ponderosa pine near Moscow and Lewiston, Idaho. These spots of infestation were quite severe, with several hundred trees killed in 1947, on relatively small areas. These situations will be watched during the coming season.

Black Hills Beetle (Dendroctonus ponderosae) - Ponderosa Pine

Fortunately the range of this destructive insect extends only into the forests of southeastern Montana. A light infestation of this beetle which occurs as individual attacked trees and some small groups is distributed throughout the Sioux Division of the Custer National Forest. Although at the present time the situation is not overly alarming, it should be watched carefully.

Western Pine Beetle (Dendroctonus brevicomis) - Ponderosa Pine

Late in 1947 a situation was reported from the West Fork District of the Bitterroot National Forest, that can become serious. In a blow down of ponderosa pine it is reported that on less than 200 acres there are 500 trees infested with the western pine beetle. The potentials of this situation are really alarming as blow down areas often give rise to destructive beetle populations. This area will need be carefully examined during the coming season to be sure that no epidemic outbreaks develop as a result of this abnormal accumulation of favorable host material.

Within the ponderosa pine stands of the Kootenai National Forest there is a scattered annual loss resulting from the attacks of the western pine beetle. Although for any one season this loss is not heavy, over a period of years it becomes quite serious. At least within these areas it has been considered as of sufficient importance to warrant a slight salvage cutting to harvest dead and dying trees.

For a number of years reports of ponderosa pine losses have been received from the Clearwater River area of the Nezperce National Forest. This seasons report indicates little if any change in the activity of this insect throughout this area of 80,000 acres.

Douglas Fir Beetle (Dendroctonus pseudotsugae) - Douglas Fir

It is believed that within the Northern Rocky Mountain area the Douglas fir beetle is destroying more timber than any other bark beetle species. There are infestations of this beetle scattered throughout most all Douglas fir stands which reach all degrees of severity. In years past, losses of Douglas fir were not viewed with great alarm, as its value did not seem to warrant much consideration. However, as these low values no longer exist, it would seem that the importance of these losses must be placed upon a much higher level.

The most serious Douglas fir beetle infestation within the region is at McGregor Lake near Kalispel, Montana. On this area of State and privately owned forest lands there are thousands of merchantable trees that have been killed during the past few years. This outbreak apparently developed from logging slash and then spread into uncut areas adjacent.

The Bitterroot National Forest reports an increasing outbreak of this insect within the Eight Mile Creek drainage. There is also a potentially dangerous infestation within the West Fork District of the same forest, which was previously reported. Severe situations have been reported from the Eighty Day and Little Bumble Bee Creeks of the Coeur d'Alene National Forest.

Heavy losses of Douglas fir are occurring within the Big Timber District of the Gallatin National Forest. On the Helena National Forest there are rather severe infestations scattered throughout the Canyon Ferry and Townsend Districts. It is rather apparent that the destructive bark beetle population now present on the Gallatin and Helena Forests started in the large areas of Douglas fir that were winter killed or injured during the winter of 1942-1943.

The Kootenai Forest reports rather heavy Douglas fir losses, especially in recently logged areas. Losses of Douglas fir are reported from the Seeley Lake District of the Lolo Forest, which is a light infestation of long standing, and apparently of no great seriousness. The Nezperce again reports a Douglas fir beetle infestation in Grouse Creek, which is not considered as increasing. There is also a rather severe infestation in the Cow Creek drainage of this forest which was recorded in 1947. An infestation reported by the St. Joe Forest as occurring in the Dago and O'Neil Creek

drainages is considered as dying out. Some losses are reported as occurring within the northeast corner of the Yellowstone National Park, and in the Coal Creek and Bowman Districts of the Glacier Park.

These are only the infestations which have been reported and of which we have some definite record. There are undoubtedly many others of equal severity for which no data are available.

Engelmann Spruce Beetle (Dendroctonus engelmanni) - Engelmann Spruce

The Engelmann spruce beetle takes an annual toll from all mature spruce stands within the region. Unfortunately the occurrence of this loss is seldom recognized as the foliage of the attacked trees falls before there is much discoloration. As a result there are no "red topped" spruce trees, which is usually the first indication of a bark beetle infestation that is observed. Spruce trees which still harbor beetle broods, appear to have been dead for years. In addition to this annual loss, when epidemics occur a large percent of the trees are attacked and killed in a few years. Abnormal accumulations of windfalls contribute to the development of destructive spruce beetle populations. The occurrence of unusual numbers of windfalls should be viewed with alarm.

Near McCall, Idaho on the Payette National Forest, there are two centers of severe spruce beetle infestation. One of these was logged late in 1947, and it is hoped that this action will check further development of the infestation in that area. A thorough examination will need be made of this general area during the coming season, as the potentials of this situation are truly alarming. In this rural and village community, where lumbering is the only manufacturing industry, spruce comprises a large percent of the timber reserve. As far as is known this is the only spruce beetle infestation within the region.

FOREST DEFOLIATORS

Douglas Fir Tussock Moth (Hemerocampa pseudotsugae)

So much has been written concerning the recent epidemic outbreak of the Douglas fir tussock moth in northern Idaho, that the story will not be retold in this report. As to the success of the control operation directed against this outbreak in 1947, it is sufficient to say that no additional work will be necessary in 1948.

Infestations of the Douglas fir tussock moth reported from the Colville, Lolo, and Nezperce National Forests did not develop to proportions warranting control.

A species of tussock moth was recorded within an area of lodgepole pine near West Yellowstone, on the Gallatin Forest. Defoliation was quite light but the situation will be watched carefully.

Spruce Budworm (Archips fumiferana)

No accurate records are available as to the location or acreage of the spruce budworm infestation within the fir forests of Idaho and Montana. Although many thousands of acres are involved, there have been no serious losses of timber. In areas where the budworm has been working for a number of years, some top killing has occurred, and the Douglas fir beetle is now working in the larger trees that have been weakened by defoliation.

The Deerlodge Forest reports a budworm infestation that is distributed throughout the Whitehall District with several areas of severe concentrated damage. The Big Prairie, Spotted Bear, and Canyon Districts of the Flathead Forest again report serious epidemic outbreaks. In the Big Prairie District, the mortality of trees up to 6 inches D.B.H. has been estimated at 10 percent of the stand, with the larger trees being badly weakened and susceptible to other destructive agencies.

On the Gallatin Forest the budworm infestation within the Bozeman district is reported as subsiding. However, severe defoliation, with large flights of moths were recorded in most all Douglas fir forests of the Helena District of the Helena Forest. The infestation within the Canyon District of this forest is considered as being of somewhat reduced severity.

There are severe budworm outbreaks within the White Sulphur and Musselshell Districts of the Lewis and Clark Forest. On the Powell District of the Lolo Forest a severe and large infestation is considered as being at about the same level of severity as recorded in 1946.

There are budworm epidemics within the Salmon River, Clearwater, and Selway-Middlefork District of the Nezperce Forest with considerable tree mortality reported. There is also an infestation of this insect in the southwest corner of the Yellowstone and within the Big Springs District of the adjacent Targhee Forest. In these areas considerable lodgepole pine is being attacked.

In addition to these areas of which we have some definite data, there are no doubt others of equal size and severity. As stated, the acreage of budworm infestation is not known, but it can be said that there are hundreds of thousands of acres.

Blackheaded Budworm (Perona variana)

Glacier National Park reports an outbreak of the blackheaded budworm within the Douglas fir, white fir, and spruce stands of the Nyack Creek drainage. This situation is considered as serious with some tree mortality and many others in a dying condition. Although the potentials of this insect has been known for years this is the first epidemic outbreak of which we have record. An examination of this outbreak has been requested.

Pine Butterfly - (Neophasia menapia)

During August pine butterflies can nearly always be seen hovering around the tops of mature western white pine, but there are no records of damage to this tree species. However, at unpredictable intervals which have been of rather long duration, destructive epidemics occur in ponderosa pine causing severe losses. The last outbreak of this insect occurred near McCall, Idaho, in 1922-24, at which time a large volume of pine was killed.

During the past season the occurrence of these butterflies in unusual numbers was reported from the West Fork District of the Bitterroot Forest. This condition was also observed in the southwest corner of the Yellowstone Park, where this insect is apparently working with the spruce budworm.

Hemlock Looper (Ellopia fiscellaria)

An outbreak of this destructive insect has been reported as covering some 75,000 acres in the Seeley Lake District of the Lolo Forest. This is the first year that the defoliation resulting from this outbreak has been observed. Although its future is uncertain, should it follow the pattern of previous outbreaks severe timber losses can be expected before natural forces of control again prevail.

Larch Sawfly (Nematus erichsonii)

An infestation of the larch sawfly was reported from the Swan Lake District of the Flathead Forest. This outbreak is in the Crane Creek drainage and extends over some 600 acres. No losses of timber have been recorded as a result of previous epidemic outbreaks of this insect.

MISCELLANEOUS FOREST INSECT SITUATIONS

A report of severe damage to the 1947 seed crop of ponderosa pine was received from the Stevensville District of the Bitterroot

National Forest. A large percent of the cones were infested by what was assumed to be the pine cone moth (Laspeyresia piperana).

Injury to new foliage growth of white fir was reported from the Moose Creek District of the Bitterroot National Forest. This injury has been observed on many occasions, but no definite answer can be given as to the reason for it. It is believed to be the result of some abnormal weather condition.

An attack of ponderosa pine trees by the red turpentine beetle (Dendroctonus valens) was reported from the Newport District of the Kaniksu National Forest. This situation was not considered serious.

Fading and dropping of foliage from Douglas fir trees was reported from the Deerlodge District of the Deerlodge Forest; the Plains District of the Cabinet, and the Darby and Sula Districts of the Bitterroot. Several other reports of this condition were received from Christmas tree operators in western Montana. The report from the Deerlodge Forest stated that in some instances the damage occurred as strip or belts along the mountain sides. Such conditions are what is called "Montana Red Belt", and is purely a weather injury. However, in most of the situations reported and samples submitted, the damage was not "Red Belt" injury. As suggested by many it could have been the result of some abnormal weather condition, or perhaps the lack of so called normal weather. Spider mites were found on all material examined, and there was ample evidence of the Douglas fir needle cast. It is difficult to establish any of these factors as the primary agency, when all, or even some other unrecorded factor could have played a part.

The Oregon engraver beetle (Ips oregoni) is a potentially dangerous insect of ponderosa pine and lodgepole pine. Although it is usually considered as being secondary in its attacks, when large populations develop from logging debris or other abnormal accumulations of favorable host material, their attacks become primary and healthy trees are killed. Damage from this insect was recorded at several areas throughout the pine forests of the region.

A severe scale, Aspidiotus californicus, was recorded on ponderosa pine in and around the City of Spokane, Washington. This situation may become quite serious as many trees are already in a decadent condition.

CONCLUSIONS

As stated, this report has been compiled from all available sources of information. It is recognized that it is only as complete and accurate as the data from which it was prepared. To make future

reports as complete and as accurate as possible, your assistance is solicited. All abnormal forest insect conditions should be reported promptly. If this is done, not only will the full status of conditions become better known, but valuable information contributing to a more thorough program of surveys will be made available.